

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
11 July 2002 (11.07.2002)

PCT

(10) International Publication Number
WO 02/054303 A1

(51) International Patent Classification⁷: G06F 17/60

(21) International Application Number: PCT/IN00/00135

(22) International Filing Date:
29 December 2000 (29.12.2000)

(25) Filing Language: English

(26) Publication Language: English

(71) Applicant and

(72) Inventor: DHANASINGH, Navamani [IN/IN]; 64, 2nd Street, Asprin Gardens, Kilpauk, Chennai 600 010 (IN).

(74) Agents: SURANA, P.s et al.; Surana & Surana International Attorneys, National Insurance Building, 224, NSC. Bose Road, Chennai 600 001 (IN).

DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW.

(84) Designated States (regional): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).

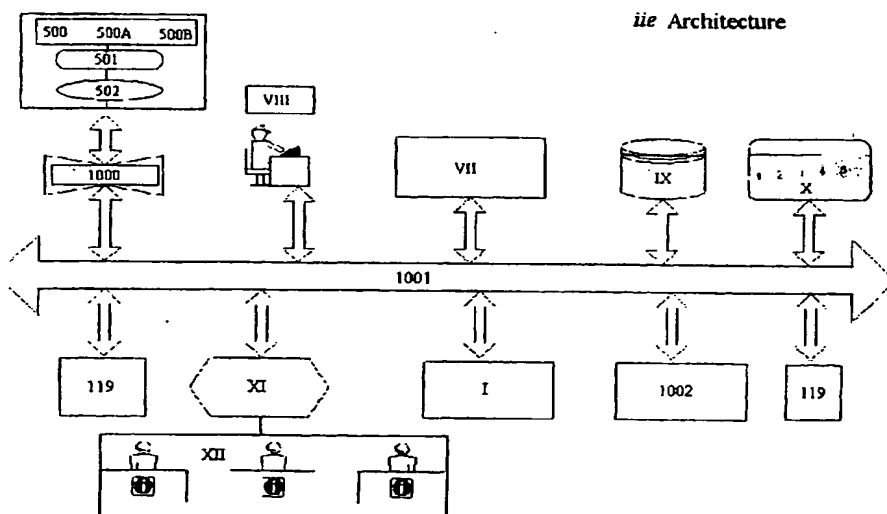
Published:

— with international search report

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(81) Designated States (national): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CR, CU, CZ,

(54) Title: INTELLIGENT INTERACTIVE E-COMMERCE TECHNOLOGY



(57) Abstract: The Intelligent Interactive E-commerce Technology, is an electronic personification of a customer service representative assigned and confined to the task of interacting with virtual customers and thereby intelligently connect the customer to an automated customer service resource at any time from any customer location to transact a sale in a commercial portal or provide customer service on a non commercial portal. The iie online Rep is adaptive and amenable to training so as to meet the consistently changing E-commerce and M-commerce environment. The versatility of the invention offers tremendous scope for constant improvisation and up-gradation to characteristic features thus providing critical input to enhance the potential of Internet based applications. The application of the invention can be extended to widely divergent areas of services and information. This technology can be applied to any regular personal computer based browser environment, mobile palm top device or PDA system.

WO 02/054303 A1

INTELLEIGENT INTERACTIVE E-COMMERCE TECHNOLOGY

FIELD OF INVENTION**TECHNICAL FIELD**

The present field of invention relates to a virtual customer service software system in a computer system and a procedure, process, method and devise whereby, a customer from any location connects with or accesses any portal in any location, to effect a commercial transaction or place an order, more particularly over the Internet.

BACKGROUND OF THE INVENTION

The Information Technology invasion has virtually brought the entire world to our doorstep. One can shop, trade look out for jobs, redress health problems online and access entertainment and knowledge portals sitting within the comforts of the home. The major obstacle for the optimum utilisation of information for most ambitious projects is the lack of adequate technological support. The concept of e-commerce involves a constituent web of diverse dynamic contributory factors, which work in tandem with each other's characteristic scope and application to evolve into a single functional entity. From the computer desk top to across the maze of digital and electronic network of the Internet domains and to the destinations of virtual interactive applications, every single factor is a product of constant technological improvisation. These improvisations contribute to the overall performance enhancement of the functional level of web-based commerce.

What many see as a novelty is bound to become a way of life. This means that people will start shopping from web sites as they would be doing from the regular Brick and Mortar store located two blocks down the street. And they would expect the same kind of customer friendly service from these virtual malls. In the present scenario the effective synthesis of the contributory factors has been constrained due to the absence of an innovative and intelligent tool which would provide compatibility and cohesion in the transition from the brick and mortar store to a click and mortar virtual mall.

Though an innovative customer support system is the pre-requisite to any e-commerce application, an objective assessment into the existence of any such application software, which

may possess similar characteristics, has proved in the negative entities by themselves. They are a conglomeration of diverse and related interests viz. manufactures, distributors, retailers, bankers, shippers, and customers. And in the case of virtual enterprises it is a complicated and concerted web of activity that need interactive coordination and cohesion to attain functional efficiency. A hype about online customer service has been indiscriminately created by the torrid pace of evolution in the present virtual environment without substance or content. The tall claims made by dot coms have hardly been substantiated with content in their sites. The sites lack the tight cohesion of factors that would add punch to the experience of virtual shopping. Apart from identifying and locating the appropriate portal site, navigating through the undefined labyrinth of screens in the existing portals is a laborious process. This is because, it is virtual shopping has become a monotonous exercise of browsing through drab screens with no interaction with the application or exchange of thought. It is of utmost importance to understand the human psyche where human involvement is concerned and online shopping is no exception. .

The existing technology does neither maintain an exhaustive nor comprehensive information database on preferences, requirements and options based on previous encounters or contacts with customers, market surveys, customer queries and direct sales. The mode of communication could be through telephone, e-mail, fax, instant messaging, video-conferencing or any other interaction through the web. This data gathered through such encounters and exercises become very handy to businesses and customers alike, especially when service to customers is a personalised affair or when upgrades, newer products and convenient alternatives are introduced to them. Thus the whole exercise of virtual customer relations is neither fast nor friendly.

E-commerce applications all along have been used to build customer friendly online catalogs, facilitate customer navigation, effect on-line sale, create inventory tracking network, maintain credit card processing capabilities and so on. . A never ending stream of initiatives have been taken up, but none have been evolved to come even close to implementing the idea of virtual customer service, in a manner that would provide efficiency, efficacy and credibility to the concept.

The existing interactive customer service applications are neither exhaustive in content nor comprehensive in nature. Their inherent inadequacies do not in any way bring the customer even remotely close to a consummate on-line shopping experience. The present scenario has not made an attempt to null the void between human and computer interfacing.

People are adaptive problem solvers and can deal with new situations on their feet and handle incomplete and inconsistent information in real time, usually making good business decisions based on judgment gained from experience. This is precisely what computers must be empowered to do in

E-commerce. Computers like their human counter parts will have to be adaptive, knowledge based 'workers' who continuously learn from experience. Typically, all that is required is an intelligent interactive link, placed within the appropriate sections of the site. A click should enable a pop-up window, from within which customers can begin a text-based conversation with the intelligent interactive link, which is trained to sustain a dialog and clinch a real time sale. Intelligent Interactive customer service is the ticket that businesses may need to improve their site's conversion rates and customer satisfaction levels. The real time nature of the Internet only serves to heighten customer expectations with regard to response time and service. An instant medium requires instant answers. Anything less can lead to a disappointing online experience. This is the absolute need of the prevalent e-commerce scenario. The process of online navigation and interaction needs be devised in such a manner that it kindles the curiosity of the shopper.

In the prevailing commercial portals, a typical handicap is the total absence of a live backend customer service support working in tandem with the interactive application, in the case of contingencies. In most portals the customer service applications simply connect the virtual customer with the live backend and do not attempt or induce a direct sale. And in some portals the customer service application indulges exclusively in the act of direct sale and are not potent enough to effectively coordinate and interact with live customer support. The success of online shopping lies exclusively in the concerted and coordinating activity of the virtual customer service with that of the live back end. Virtual customer service applications have so far never

combined effectively with live customer support as a single commercial or non-commercial portal. The present applications usually churn out drab and repetitious preconceived text while interacting with customers, without any scope for improvised articulations. The customer is permitted either to haplessly engage in an act of 'virtual loiter' or simply exit without being asked a single question that may have gone a long way in meeting the requirement of the customer. Such visits go unnoticed and unrecorded which if had been the case, would provide valuable input for the process of customer orientation. This is due to the absence of any trainer devices that gather input from recorded encounters. Lack of effective interaction between the application and the physical backend support, leads more often than not, to disastrous delivery schedules. Contemporary applications do not possess a dynamic inventory system with an in-built ability to self update stock position and replenish depleted stock and thus very often the customer is exposed to an archaic and redundant inventory status.

The most that well established commercial portals strive to do is to facilitate online transactions through the services of a live customer support backup. None of these portals use the sophistication of an exclusively engaged electronic agent or software application to effect online transactions. This always needs to be complimented by a posse of live customer care personnel. The portals simply find it impossible to remain exclusive of the human factor. This comes with its many constraints. Human enterprise is restricted to a comfortable 8 hours a day work schedule and 24 hour service is unimaginable at this juncture of E-commerce. In spite of having acquired the services of computers and the Internet, reliance on the human element has restricted the quantum leap that E-commerce is very capable of achieving. The investment into technological infrastructure has in no way brought about cost reprieve because of this constraint. And the optimum utilisation of this infrastructure is dependent on the human factor. Major commercial portals spend millions in training their personnel apart from being confronted with hefty wage bills. Hence, the need of the hour is the services of an application that would intelligently interact with customers and would be capable of replicating online, the services of human customer service personnel.

E-tailors need to get creative by exploiting the Web, displaying information on complementary products, and images with multiple camera angles and size options. The application should be able to innovatively improve the online shopping experience by initiating interactive dialogues with product experts or other customers online and thus enhances site performance.

In the strictest sense, customer service in a brick and mortar store alone provides the perfect back ground that could be emulated by any virtual customer service application and the present invention is therefore directed to the problem of developing an application that extends the vital human touch to an otherwise unemotional and impersonal encounter. The fact that this invention has been conceptualised and conceived explains its indispensability and the absence of any such application makes it impossible to compare and contrast it with the contemporary.

SUMMARY OF THE INVENTION

This clearly presents a need for "The Intelligent Interactive E-commerce Technology" (*iie*), which has been designed and developed to cut through broad demographics and serve each customer on an individual basis, by extensively interacting, co-ordination, documenting and recording the course of a business activity, interaction, transaction or even make note of random or cold calls. The built-in-indefatigable and potentially versatile features of the invention are meant to augment and enhance the fragile line of communication between the front-end and the back-end. Thus the floundering by businesses, at the time of transition, so far thought to be inevitable, will be a thing of the past with the advent of this invention. The scope of application of *iie* far reaching and its versatility enables it to be integrated with any portal of information ranging from health care to professional consultancy, commercial to non-commercial portals and entertainment to trade portals. *iie* is set to usher in an era of affordable and easy access to intelligent interaction between the electronic medium and the physical end thus pitch-forking E-commerce itself into newer realms of achievement.

The idea behind the invention is pioneering, innovative and refreshingly simple. The purpose is to provide an adaptive, trainable and automated online customer service software modules/tools, which has an built-in ability to communicate, interact, co-ordinate and engage

customers in a series of business oriented maneuvers to facilitate technology endeavors to draw the customer closer to the product

5 of choice, option or even engineer random access and thus enormously enhance the probability of effecting a sale. The customer is provided with the scope to remain in brisk interaction and actively participate in shopping, by means of meticulously coded and accurately generated computer scripts.

10 The invention's intelligent interactive system includes various menus, options and trainability of the system to reason, respond and react to various text, voice, and mouse gesture commands. As the system displays information system navigates the customer to the resource of choice and thereafter negotiates a transaction. In the event of the customer not being able to take a decision due to a variety of inconclusive reasons an elaborately comprehensive and exhaustive customer information database relating to every single aspect of the field of activity coupled with a
15 customer profile is maintained to facilitate system identify the best suited resource that may be required by the customer. An in-built ability to interact with the live back-end support, a dynamic stock inventory, an history of customer visits and a plurality of other services are also provided to maximize customer satisfaction.

20 It can be logically assumed that a customer would always expect a customer friendly service in a virtual mall just as it is available in a brick and mortar mall. Unfortunately, the heterogeneous nature of the human mind and the absence of a consistently favorable socio-cultural and socio-economic environment does not provide scope for customer friendly and homogenous service oriented behavior that would augur well for a positive and enduring customer relationship. The
25 absence of such homogenous behavior makes this invention an indispensable, socially skilled, wholly acceptable, gentle, courteous, effectively persuasive and, tireless sales person. This invention is never short of energy and is briskly available 24 hours a day and 7 days a week. *iiie* is never governed by restrictive labor laws, however always conforms to the directives of Law.

30 This invention is the efficient compliment to the effective transition from "Brick and Mortar" model to the "Click and Mortar" model of commerce. This invention apart from direct and

decisive interaction with the customer provides the appropriate support. The all-pervading scope of *iie* makes it a unique enterprise, which not only supports and sustains but also would be essentially instrumental in the rapid progress of e-commerce itself.

5

This invention is as much futuristic as it is contemporary. It is built to prudently enhance the power of the Web and transform it into a viable platform of commerce. It is an established fact that predominantly the virtual nature of e-commerce is not and cannot be wholly virtual. *iie* is an innovation groomed to provide the intelligent and interactive binding between physical and virtual retailing of goods, commodities services and the entire gamut of commerce and trade. This invention is the closest to total virtually in e-commerce.

10

The homepage of the portal, which has integrated system, has on display the trademarked *iie* logo. The first click on this logo transports the customer to a screen from where a textual conversation is initiated by the virtual customer service Rep and follows in the sequence as detailed here below:

15

First screen:

<i>iie</i>						
4 Graphical display of pictures	<i>iie</i> : 1a cus: 2a				6 Details in text form of product under consideration	
7 Display of news of local interest	8	9	1	1	1	17 Graphic display of product under consideration
			0	1	2	
16						

When the system logo on the top right corner of the homepage

up with the social courtesies being extended by *iie* (1a) to which the customer's response is typed in the text box 2a. The entire conversation between *iie* the customer during the course of an encounter scrolls in sequence at 16. At the end of the conversation the scripts are documented and stored (*ieKBase*) for future use with the same customer or is manipulated by the *ieTrainer* to intelligently improvise conversations while interacting with other customers.

Clicking '8' voice enables the system, '9' is an invite button which facilitates a customer to invite his friends into the virtual mall, while '10' takes the customer to the homepage. Clicking '11,' the customer gets connected with the live customer service support and '12' is the OK command.

iie initiates the interaction with the customer at 1a with ' Welcome to J-Mart. May I have your account information please ? The customers responds in 2a with ' Oh sure, my account no. Is xxx and my password is yyy' and thereafter clicks OK. Likewise, the interaction switches from courtesies to generalities to specifics in the following sequence which is only illustrative and not exhaustive:

1b: I'm sorry Mr/Mrs/Ms. zzz, your password has expired. Would you like to create a new one?

2b: Yes/No, I would like to have yyy and my new password. Just to reconfirm, my new password is yyy

On clicking OK button the system accepts the command and move to

1c: Thank you Mr/Mrs/Ms. zzz. I see you purchased a pair of shoes from us on 25 December, 2000. Were you satisfied with that purchase?

2c: My comment is: Delivery was late

: It was damaged

: It was not what I had ordered

: I was very pleased

: It was OK

: No comment

On the customer clicking the OK button one of the drop down options the system moves on to

1d: Thank you Mr/Mrs/Ms. zzz, I will pass along your comment to the appropriate department.

5 Now

How may I help you?

2d: I would like to: Shop

: Chat with the live customer support

: Look at the items on sale

10

On the customer clicking the OK button one of the drop down options the system moves on to

1e: Let me take you to the aisles and locate the product for you. You may use our detailed map in the

15 Bottom right hand corner of your screen or tell me which aisle you would like to visit.

2e: I would like to go to: Mens' wear

: Ladies' wear

On the customer clicking the OK button one of the drop down options the system moves on to

20

1f: Now that you have come to the eye glasses showroom, I like to let you know about a sale in this

Department. All our Pupil Sunglasses are 50% off through Sunday. Would you like to see them now?

25 2f: Yes, please show them to me

: No thanks; I would like to continue shopping

On the customer clicking the OK button one of the drop down options the system moves on to

30 1g: Yes Mr/Mrs/Ms.zzz, please tell me what kind of glasses you are looking for

2g: I am looking for: Sunglasses

: Reading glasses
 : Contact Glasses
 : Lenses/Frames

5 On the customer clicking the OK button one of the drop down options the system moves on to

1h: Sure, we have plenty. Tell me little more about the product you like, so that I can help you find

Exactly what you are looking for

10 2h: Size: 8.5 Price : Under \$ 10 Colour : Blue Brand : AAA
 : 9.0 10 - 15 Red BBB

On the customer clicking the OK button one of the drop down options the system moves on to

15 1i: We have all your specifications except price. Please look at the items I have selected for you
 That meets your other criteria

2i: I like to: Take a rain check

: Continue Shopping

: Select again

20 : Go to another department

When the customer gives the option in 2g for example if it is Sunglasses, all the brands of sunglasses available in the mall are instantaneously displayed in 6. When an item is chosen from 6, a digital photo image of the item is displayed at 17 for the customer to view. The image
 25 can be manipulated accordingly to be view from various angles.

The present invention has been programmed to works with scripts instead of traditional screen input and output. An ingenious application layer called *ieBOSS* (ieBusiness Object Script Simulator), has been introduced between the end-customer and the software application. The
 30 software applications are a totally Object Oriented Programming System which means that the application software would necessarily be a package of numerous software modules that

function independently. These software modules are integrated with higher-level functional groups called *ieBO* (*ieBusiness Objects*). Human customer service support (CSS) uses the *ieTrainer* to train *ieBOSS* to communicate between end-customer and the software application. The CSS trains *ieBOSS* one time for each single conversation and provides link between
5 conversations. Based on the training rendered *ieBOSS* interacts and converses on it' own. Every single interaction it has with the customer is unique as the flow of the conversation is structured to correspond with the thought process of the end-customer.

BRIEF DESCRIPTION OF THE DRAWINGS

10 Referring now to the drawings accompanying the description in which like reference numbers represent corresponding parts throughout:

FIG 1 is one embodiment of the sequential process, which illustrates the customer(s) initiating an access with the *iie* virtual mall through the Internet.

15

FIG 2 is a block diagram of the *iie* front-end customer innovative selection screen.

FIG 3 illustrates how the home page of the virtual mall vendor would appear when *iie* is incorporated in it.

20

FIG 14 is a depiction of the entire *iie* architecture.

FIG 5 is the business logic that enables creation of the isle map with input from the virtual catalog.

25

FIG 6 is one embodiment of the *ieBOSS* the backend business logic related to a control panel which functions like a console having different functions.

FIG 7 is one embodiment of the backend business logic sub system *ieBO* related to the
30 maintenance of the *iie* object oriented systems.

FIG 8 illustrates by way of a flow chart the *ieBO* Script Process

FIG 9 is one embodiment of the *ieScript Manager* comprising the backend business logic related to the creation of generic variables which are required during the script generation
5 process, within predetermined textual parameters that initiate an interactive conversation.

FIG 10 is one embodiment of the Backend Support System, which extends process logic and decision support logic at the time of script generation.

10 FIG 11 illustrates by way of a flow chart the Product Process.

FIG 12 is the embodiment of the Product Specification Screen comprising the business logic related to the attributes, qualifiers and script pertaining to product specifications.

15 FIG 13 is one embodiment of the *ieInventory* comprising the backend business logic related to the inventory status, which links the *ieCatalog* with the actual stock information.

FIG 14 is one embodiment of the *ieTrainer* comprising the backend business logic related to the creation of drag and drop scripts essential for backend processes that culminate in
20 intelligent interaction with customers. This sub system enables artificial intelligence of *ie* system and dynamically generates scripts based on the options extended in text by the customer.

FIG 15 is an overview of the initial interactive transaction.
25

FIG 15A is an overview of the subsequent interactive transaction.

FIG 15B is an overview of the interactive chat application with the live customer service.

30 **DETAILED DESCRIPTION OF THE INVENTION**

In the following detailed description of the present invention, an electronic customer service representative, for use with any local computer system, mobile palmtop device or any PDA system using the internet, numerous specific details are set forth in order to provide thorough understanding of the present invention. Well known methods, procedures, components, and circuits have not been described in detail as not to unnecessarily obscure and complicate aspects of the present invention. For the convenience of brevity, multiple functional aspects and options integrated into a single component or feature have not been elaborated upon. The present invention describes a unique type of intelligent interactive software system.

FIG 1 is a high level diagrammatic representation of the constituting network of factors involved in the process of a customer initiating an access to the *iie* virtual mall, through the internet by either using a computer system (500) or a PDA system (500 A) or a mobile palmtop device (500 B) (this is illustrative of the adaptive and versatile accessibility of *iie*), from anywhere in the world. The customer connects to the ISP (501), which connects to the Internet backbone (502) through which the client can invoke *iie* (503). The application provides for simultaneous accesses to a 'rendezvous window' in the *iie* server, from multiple locations to enable friends and relatives conduct 'chat shopping' at Label 5.

iie is able to carry out its action with a certain level of autonomy based on its programmed skills, knowledge base and learned skills through experience. The customer may interact and communicate and with *iie* via any of several input sources namely a mouse, a voice recognition device or typed textual commands from the key board. *iie* can also receive input from sophisticated devices like web cameras, video cameras, digital imaging and scanning devices, microphones etc., connected to the computer, palmtop devices or PDA systems. *iie* is versatile enough to embark on a multi lingual interaction with the customer. Speech synthesis devices turn text into spoken words. *iie* is spontaneously responsive to application-specific commands. A compliment of live customer support service personnel (XII) is also connected to the customer (on request) by the system.

FIG 2 displays the homepage of the virtual mall (102), with the it (as illustrated). Label 21 displays the browser's address bar, tool bar and menu, which facilitate navigation. The homepage also indicates the name of the virtual mall (100).

- 5 FIG 3 is a block diagrammatic representation of the front-end screen, which enables the customer to initiate a dialog with *iie*. Label 1, Label 2 display logos, commercial captions, and Label 3 display the *iie* logo. When the customer clicks on the *iie* logo (101) in the homepage of the virtual mall (102) the customer is navigated to the initiation screen (FIG 2), wherein the customer types the desired text into the text box (Label 14) (after formalities of authentication and verification are completed in the case of a registered customer). This initiates a dialog with *iie*, the sequence of which is recorded and displayed in Label 16. This record of conversation is relayed to the live customer support in the event of the customer desiring to connect with the live customer support (XII). At the end of the conversation the scripts are documented and stored (ieKBase IX) for future use with the same customer or is manipulated by the ieTrainer (VIII) to intelligently improvise conversations while interacting with other customers. Label 8 voices enables the system and can facilitate wireless applications. Clicking Label 9 and Label 15 facilitates simultaneous accesses to a 'rendezvous window' from multiple locations to enable friends, relatives and other customers to conduct 'chat shopping' at Label 5, which also displays the conversation between the customer and *iie*. Label 11 opens up a conversation between the customer and the live customer support. Label 6 displays a detailed inventory of the selected item viz., colour, dimension, model etc. When the customer exercises his option by choosing from Label 6 the item of choice is displayed in Label 17. Label 7 displays localized news items of interest viz., weather report, daily headlines, share market etc. This information will be in tune with the customer's locality. Label 4 displays any relevant pictorial graphic
- 25 Label 6 displays the available list of options for a selected product. For example, if the customer selects a mobile telephone, label lists out the different models of the mobile telephone available in the mall. This is dynamically generated by *iie*. Once a list of mobile telephones is identified based on the customer's selection criteria, *iie* displays the details of all the items in this label. As the customer scrolls through the list displayed in the label, the corresponding picture will be displayed at Label 17. The backend will come up with the right set of qualifiers
- 30

to identify a product or information and also will supply a s
each qualifier. This will help the customer to pinpoint the product quickly and easily.

Label 10 displays the home button, which facilitates the customer to get back to the home page
5 of the mall. Label 12 displays the OK button, which communicates a customer's commands to
the system. Label 13 displays a query button. When the customer asks a question and *iie*
retrieves an answer from the *ieKBase* (IX). Label 15 displays the button, which facilitates the
customer to communicate with other users who are also online and logged on to the web site.
Label 18 displays the browser address bar in which the URL request is typed. Label 19 displays
10 the browser buttons. Label 20 displays the browser menu.

FIG 4 is an embodiment of the entire *iie* Technology architecture. It depicts the customer (FIG
1), accessing the *iie* server through the Network security (1000) and connecting with the *ieBus*
(1001) on to which the *iie* functional components are networked for coordinated
15 implementation of tasks. The *ieConverse* (XI), facilitates interaction between the customer and
the backend live customer support. The ensuing interaction is linked to the conversation that
the customer has already had with *iie*. The *iecatalog* (I) displays the stock status while
networking and functioning in tandem with the *ieInventory* FIG 12. The *ieCatalog* is an *iie*
business process incorporated in the system. One cannot simply scan a picture of a shoe and put
20 it on the web site and expect that to sell. It takes lots of efforts to sell in a brick & mortar store.
The online *ieCatalog* process simulates a live process viz., taking the item out of the box and
putting it on display. The process allows one to define the service and the information more
clearly so that e *ieTrainer* (FIG VIII) can create a script and facilitate the *ieBOSS* communicate
with a live script. The *ieKBase* database (IX), which is enhanced through every single
25 encounter experience with customers keeps analyzing constantly on factors like - what is
working and what is not working? How can one improve the conversation and make it more
intelligent and engaging? The answer is in the
experience data. Appropriate drilling based on the data accumulated by *ieKBase*, builds
intelligence into *ieBOSS*. It is exclusively a database of encounter experience information.
30 *ieInfo* (X), is a database of assorted and classified information relating to each and every aspect
of customer encounter. This information is sorted out from the *ieKBase* and classified

appropriately to facilitate access any time in the future. This is in content and could immensely contribute to customer survey, product movement, delivery schedules etc. This enables effective analysis of factors that relate to customer relations, product and stock management, peak and lean season trade, consumer demand pattern, supply requirement etc. *ieCusinfo* (1002), is a database exclusively dedicated to the individual customer. It contains the product affinity, choice and preferences that a customer would exercise while on a virtual visit to the mall. The information is assorted on an individual basis right from the very first encounter with any customer and every other encounter is a build up or update to the previous ones. This information could include socially acceptable personal information, which would be maintain under strict security parameters. A panel a live customer support personnel (XII) is networked to the *ieBus* to coordinate with the *iie* or the customer if an when required.

FIG 5 to FIG 12 are an embodiment of backend systems and subsystems :

FIG 5 depicts the subsystem, which enables a backend system operator to create a mall isle map (103). When a new product arrives, the backend operator enters the product name and the description in Label 1 and Label 2 and drag and drops them into the corresponding isle map. Once this is stored in the backend, the *iie* front end automatically displays it in the isle map. It is one of the *ieBOs* supplied by *iie* Technologies to a retail business website. *ieCatalog* helps the customer to define the product so that *ieBOSS* can display online, the dynamically generated mall map, make counter offer, take rain checks to deliver in the future, or even allow bargaining. *ieCatalog* also makes the transaction truly online by interacting with the live inventory.

- | | | |
|------------|---|---|
| Clicking I | → | Invokes <i>ieCatalog</i> |
| II | → | Invokes the Product Specification module |
| III | → | Invokes the inventory backend system |
| IV | → | Invokes the <i>ieBO</i> Maintenance Subsystem |
| V | → | Invokes the Script Manager |
| VI | → | Invokes the Decision support module |

- VII → Invokes *ieBOSS*
- VIII → Invokes the *ieTrainer* Module
- A → Product map or isle map of a virtual mall. For example, Men items
- B → Product map or isle map of a virtual mall. For example, Women items
- 5 103 → Isle map
- 104 → Name of the Product is entered here
- 105 → Description of the Product entered in Label 1 is entered here
- 106 → Product Group Description
- 107 → Name of the product (caption)
- 10 108 → Description of the product (caption)
- 109 → Name of the Virtual Mall

FIG 6 represents the constituent components of the *ieBOSS* (VII). The present invention works with scripts instead of traditional screen input and output. A new application layer called *ieBOSS* (ieBusiness Object Script Simulator), is be introduced between the end-customer and the software application. The software applications are a totally Object Oriented Programming System which means that the application software will be a package of very many software modules that function independently. These software modules are combined with higher-level functional groups and are called *ieBO* (ieBusiness Objects) (119). Human customer service support (CSS) (XII) use *ieTrainer* (VIII) to train *ieBOSS* to communicate between end-customer and the software application. The CSS trains *ieBOSS* one time for each single conversation and provides link between conversations. Based on the training rendered *ieBOSS* interacts and converses on it's own. Every interaction it has with the customer is totally unique as the flow of the conversation is structured to correspond with the thought process of the end-customer.

The *ieBOSS* is the main module, which controls the other sub-modules and is responsible for maintaining the dialogue between the customer and the system. It is like an operator console to *ie*. It consists of several modules viz.,

A → Session Manager. This module records a
the

Customer. This takes care of the individual customer.

B → Network Manager. This module takes care of the *iie* hardware
Networking. (Integration between all *iie* sub systems).

C → Security Administration. This module maintains the system's integrity
and restricts any malicious entry (Security sub system).

D → System Administrator. Overall system administration.

E → Database Administrator. Since *iie* is a database driven application, the
database needs to be fine tuned and maintained, which is done by this
module

F → *ieBO* Manager. All the business functionalities are defined in this
module. The

Business objects are also controlled by this module.

FIG 7 is illustrative of the sub-system that maintains the *ieBOs*. *ieBusiness* Objects or the times
operational Software Application Packages are grouped by the operational functions and they
are distinct object oriented systems. Each *ieBO* has its set of *ieBO* scripts and name of
function(s) for processing the responses of the customers. 119 indicates the *ieBO* Name, while
120 contains ID of the *ieBO* function and 121 defines the *ieBO* function parameter. The *ieBO*'s
functional response information are stored in 122, 123 contains the *ieBO*'s result data and 124
contains the *ieBO*'s functional result after the objective has been executed. This backend
system allows *iie* to be configured in such a way that, when the customer wants to buy a
specific product, *iie* backend system picks up the product from the inventory, based on the
response it gets from *iie*. For example, if the product was available, *ieBO* would respond with a
return value based on which the *iie* script is generated for the customer, giving details of
availability, price discount etc.

Function A1 the authentication of the customer ID and password while A2 facilitates retrieval
of the benefit information from database and thereafter display it. A3 enables the retrieval of

specified data from the database, for example, a list of doctors in a particular locality, and thereafter display it. \$\$ indicates the Display and Accept Variable. & Indicates the Display only Variable. ## indicates the item in the drop down list box. The number following this is the code and the text is the display value. The following table is an illustration of the Script Table used by *ieBOSS* to drive the dialogue.

Table 1**SCRIPT VARIABLES TABLE**

Variable	Data Type	Length	Display Type	Display Length	Weight	BG Color	FG Color	Internal Value	Display Text
\$\$Customerid	Char	8	TB	8	Bold				
\$\$Password	Char	8	TB	8	Hide				
\$\$Zip Code	Char	5	TB	5	Normal				
\$\$Mem_option	SI	2	LB	15	Normal			0	Exit
								1	Benefit Info
								2	Doctor's List

Internal Value	Display Text
0	Exit
1	Benefit Info
2	Doctor's List

10

Table 2

A set of *ieBOs* is selected in the required sequence to accomplish a meaningful dialogue and the *ieBO* scripts associated with the *ieBOs* are stored in the *ieBO* Script Table wherein each *ieBO* has a script ID, Customer Script, Function Code, Response Code, *ie* Script Link Script ID and a Link *ieBO*.

15

IEBO	Script Id	Customer Script	Fn Code	Resp Code	IE Script	Link Script Id	Link IEBO
Log_In	Log_01	My Customer Id is \$\$Customer_id and my Password is \$\$Password	A1	0 (Ok)	Thank You &&Name, How may I help you	Mem_01	Mem_Option
				1 (Wrong)	Sorry, your password is wrong	Log_02	
				2 (Expired)	Sorry, your password has expired	Log_03	
	Log_02	Oops, here is my Password \$\$Password	A1	0 (Ok)	Thank you &&Name, How may I help you	Mem_01	
				1 (Wrong)	Sorry, your password is wrong	Log_02	
				2 (Expired)	Sorry, your password has expired	Log_03	
	Log_03						
Mem_Option	Mem_01	I would like to get \$\$Mem_Option Option ##0 Exit ##1 Benefit Info ##2 Doctor's List	ieBOS S	0 (Exit)	Thanks for using this facility, bye, bye	Exit_01	Exit
				1 (Benefit)	Here is your Benefit Information	Bene_01	Benefit
				2 (Doc List)	Please give me your zip code.	Doc_01	Doctor List
Benefit	Bene_01		A2		(Display the benefit info)	Bene_02	Mem_Option
	Bene_02	Ok., Thank you.				Mem_01	
Doctor List	Doc_01	Here is my Zip Code \$\$Zip_Code	ieBOS S	0 (Valid)	Here is the list of doctors in your locality	Doc_02	Mem_Option
				1 (Invalid)	Sorry, Invalid Zip Code. Enter Again.	Doc_01	
	Doc_02		A3		(Display list of doctors, with address)	Doc_03	

	Doc_03	Ok., Thank you.				Mem_0 1	
Exit	Exit 01		X1				

The *ieBOSS* initiates with *ieBO* Log_in, (the first *ieBO* is indicated by Config.ini file), and gets the set of 'Script Rows' for this *ieBO* from *ieBO* Script Table and looks for the 'Customer Script' in the first script row. It will parse the Customer script for variables, which are identified by prefix \$\$.

5 From the database it gets the attributes of the variable(s). The script along with the variables is converted to an Applet and sent to the customer's machine for display and accepting the customer's response. When the customer enters the value or makes his choice and presses submit button, *ieBOSS* receives the values. The values are stored in the memory. The *ieBOSS* checks if there are any functions associated with this script line for processing the response from the customer.

10 If any, the function is recalled and return value is received. The *ieBOSS* gets from the database the possible return values and the link to the next script. Depending on the return value it knows what '*ie* Script' reply needs to be displayed at the customer's machine and which script line has to be executed next. The reply is displayed and the processing of the next script line starts. The next script line may be another line in the same

15 *ieBO* or different *ieBO*.

FIG 8 is a flow chart representation of the *ie* Script Process. Step 131 retrieves the *ieBO* script row from Database using Script link id while step 132 checks the Script. If the script is empty, the system calls the function for this script line to process the customer's response and get the return code. If additional set of values are returned, they are stored in the memory (step 138).

20 If the script is not empty the system parses Customer Script (133) and if variables are found (step 134), the customer script is converted into an applet (step 136) and if variables are not found the attributes of, the variables are retrieved from the database (step 135). The applet is then sent to the customer's machine to get the customer's response. Then the system calls the

25 function for this script line to process the customer's response and get the return code. If additional set of values are returned, they are stored in the memory (step 138). Thereafter the *ieScript* and the Link Script ID for the return value is retrieved from the database (step 139) after which the *ieScript* is converted to an applet (step 140) and the applet is sent to the

customer's machine for display (step 141). The Link Script ID line (step 142).

When the dialogue reaches the level where the customer shows interest on a particular product, the dialogue is driven by a Product Qualifier Table, which has defined characteristics (Qualifiers) for each product and script associated with that qualifier and Product Qualifier Value Table having the set of possible values for each qualifier. The following is an illustration of the Product Qualifier Table and Product Qualifier Value Table.

Table 3 - Product

This table has a list of products and an unique ID assigned to each product. The product ID lists the code number for the product while product name consists the name of each product.

Sample Table

Product Id	Product Name
000001	Shirt
000002	Car
000003	Resume

Table 4 - Product Qualifier

This table lists set of qualifiers (attributes) associated with each product. For each product, there may be multiple rows of qualifiers.

Product ID is the Code number for the Product and Qualifier ID Code for the Attribute or Qualifier of the Product. A Product can have any number of Qualifiers. Qualifier Name is the Name for the Qualifier of the Product and Operator is the functionality used when checking the specified Qualifier Value in the database. Flex Level is the level of Flexibility of the Qualifier, for example, a buyer of shirt will not settle for a medium size instead of large, whereas, he may be willing to take different color from what he had in mind. The Qualifier Size will have flexibility level of 0 (not flexible) and Qualifier Color may have a flexibility level of say 3 (in a scale of 0 to 5). This will be helpful in offering the customer an alternate choice if exact match

of his requirement is not available. The highest flexible qualifier may be dropped from the selection criteria to widen the choice. This level has to be periodically adjusted by the artificial intelligence module through experience on the customer preferences over period of time

- 5 Some Qualifiers depend on some other qualifier(s). For example, the model of a car depends on the make of the car. Only after finding out, what make the customer is interested in, the different models if that make can be offered. If the qualifier is independent, it will have value 0. If it is dependent on another qualifier, that qualifier id has to be stored here.
- 10 Mandatory Order is related to the dependence of one qualifier on the other. When asking the customer on the preference, the qualifier, which is dependent has to follow after the one it is dependent on. There can be also multiple dependencies. That means, a sequence has to be there to indicate the order in which the customer has to be asked. 0 means independent and any number other than 0, indicates the order. The Query Text facilitates coining of words and
- 15 phrases for framing the appropriate question or part of question for this qualifier.

Sample Table

Product_Id	Qualifier_Id	Qualifier_Name	Operator	Flex_Level	Dep_On_Qualifier	Mandatory_Order	Query Text
1	1	Brand	=	2	0	0	of Brand \$\$1
1	2	Color	=	3	0	0	of Color \$\$2
1	3	Size	=	0	0	0	of Size \$\$3
1	4	Pattern	=	4	0	0	having \$\$4 Pattern
1	5	Gender	=	0	0	0	for \$\$5
1	6	Sleeve	=	1	0	0	with \$\$6 Sleeve
2	1	Make	=	1	0	1	
2	2	Model	=	2	1	2	
2	3	Edition	=	4	1,2	3	

Table 5 - Product Qualifier Values

- 20 This table has list of possible qualifier values for each qualifier associated with a product. For each qualifier of a product, there may be multiple rows of qualifier values.

Product ID is the code number for the Product while the Qualif

Attribute or Qualifier of the Product and Qualifier Value ID is the code for the Qualifier Value, which is the actual value for the qualifier. If Color is the qualifier, each possible color for the product is the value for the qualifier for the product. Preference Level is similar to flexibility level. It is a measure of the preference of the customers for this qualifier. For example, if White is the most preferred shirt color, it will be given high preference level, say 5 (in a scale of 1 to 5) and if black is the least preferred color, it may be given preference level say 1. Like Flexibility level, this one also has to be fine tuned through experience and will be used in offering alternate choice when exact matching item is not available.

Sample Table

Product Id	Qualifier Id	Qualifier Value Id	Qualifier Value	Preference Level
1	1	0	Any Brand	
1	1	1	Brand-X	
1	1	2	Brand-Y	
1	1	3	Brand-Z	
1	2	0	Any Color	
1	2	1	Blue	
1	2	2	White	
1	2	3	Grey	

The inventory table (Table 6 and Table 7) is also queried to ascertain the availability of the product matching the customer's specifications. If not available, alternate product(s) which are closer to the specification are offered as alternate options. Each qualifier has a flexibility level associated with it, which is updated based on the experience over a period of time. This helps in deciding the next best alternate product matching the customer's specification. In some products, one or more qualifiers may be dependent on another qualifier and an option on a qualifier cannot be prompted unless the customer lets the system know about the choice of that independent qualifier. In some cases, choices have to be asked in a particular sequence due to dependency on one over the previous ones. These are set through the mandatory sequence level and cross dependency values set of each qualifier.

Table 6 - Inventory

This table has inventory of each item of a product. Item is entity of a product having unique characteristics. Each product can have multiple items in the inventory.

- 5 Unique Item ID is the unique number assigned to an item of a product with a unique combination of qualifier values. It can be UPC (Universal Product Code). Product ID is the code number for the Product. The item Short Description briefly describes the item while the Item Long Description elaborately describes the item including all its attributes and specifications. Item Unit Price is the unit price of the item and Item Qty on stock indicates the
- 10 Quantity on stock. Discount Rate and Special Price offers are also included in this column.

Sample Table

Unique_Item_Id	Product_Id	Item_Short_Desc	Item_Unit_Price
1001	1	SHIRT-A	10
1002	1	SHIRT-B	9
1003	1	SHIRT-C	8
2001	2	Ford Escort	12050.55
2002	2	Toyota Corolla	15140.6
2003	2	Honda Accord	19260
3001	3	Resume	0
3002	3	Resume	0

Table 7 - Item Property

- 15 This table lists the Qualifier Value Id for each qualifier of an item in the Inventory table. For each Item, there will be multiple rows – one for each Qualifier Id and its Value Id. When the Qualifier Value is descriptive or in the form of a combination and therefore cannot be codified, it is then stored in this column. The Qualifier Value Id in this case will be 0.

Sample Table

Unique_Item_Id	Product_Id	Qualifier_Id	Qualifier_Value_Id	Qualifier_Text
1001	1	1	2	
1001	1	2	3	

1001	1	3	2	
1001	1	4	2	
1001	1	5	1	
1001	1	6	2	
1002	1	1	1	
1002	1	2	1	

FIG 9 depicts the Script Manager. This subsystem allows the backend system operator/Administrator to define the general variables. The *ieBOSS* requires several generic variables during the script generation process. The sub system allows creation of such variables. For example, if the customer logs on to *iie*, the first conversation would be a greeting, which is displayed as a script ' Good Morning, Mr. Jehovah', Label 5. Here 'Mr' and 'Good Morning' are variables that would be dynamically selected dynamically and appropriately by *iie* when a customer logs into *iie*. 125 is the title of General Variable and 126 are contextual variables viz., Mr/Ms or Good Morning/ Good Afternoon or Yes/No etc.

FIG 10 depicts the Decision Support System, which allows the backend administrator to put process logic into the system. 127 A Initiates the function based on customer input (Label 5), while 127 B parses the function parameters and 127 C receives response from the function. 127 D invokes the function to continue the interaction either by displaying the product in consideration or switch to a different other options and 127 E terminates the process with appropriate courtesies. The *ieBOSS*, which is the brain process of the system, requires decision support logic during the script generation

represents the operation of the *ie* Product Process. Step 143 retrieves the set of product qualifiers from the database ordered by mandatory order and stored it in the memory by using the Product ID. Step 144 acquires the next qualifier row from the memory. If no qualifier is available (step 145) left, an applet is made using the current query script line and the stored qualifier values (step 152). If qualifier is available a check is done to analyze the requirement for a mandatory sequence (step 146) and the qualifier is added to the condition list (step 147) and this qualifier is added to the non mandatory list after which the set of qualifier values for this qualifier is retrieved from the database and stored in the memory. Then the

query text is appended to the current query script line (step 1
 qualifier (step 149), either a set of qualifier values for this qualifier is retrieved from the
 database (step 150) or the set of qualifier values for this qualifier is retrieved including the
 previous dependent qualifier value(s) as conditions from the mandatory condition list (step 151).
 5 An applet is made using the current query script line and the stored qualifier values (step 152)
 and an applet is also made by using the query text for this qualifier and the list of values
 obtained (step 153), after which the applet is sent to the customer's machine to ascertain his
 choice. Thereafter the qualifiers and their values are stored in a non mandatory conditions list
 (step 154). The applet is also sent to the customer's machine to ascertain the customer's choice
 10 after which the qualifiers and their values are stored in a mandatory conditions list (step 155).
 Using the customer's preferred qualifier values as condition(s), the database is queried (step 157) to
 get the list of items matching the criteria., (qualifiers with value 0 are ignored) (step 156). If
 matching rows are located an applet is created to display the matching list so as to ascertain the
 customer's choice (step 158). If matching rows are not found the database is queried by
 15 removing the nearest flexible condition (step 159).

FIG 12 depicts the Product Specification Screen which comprises of input like qualifier and
 attributes from the backend system operator to facilitate selection of products based on which
 the product is selected from *ieInventory* (FIG 13). The *ieInventory* allows the backend system
 20 customer ascertain stock status and arrival schedules. This screen is also a part of *ieCatalog*. It
 allows the backend system operator to feed the *iie* system with input like qualifier, attributes
 and value of the respective product. Based on the options entered by the customer, the product
 is selected from the *ieinventory*. 110 contains the Product code and 110 A the Product code
 Caption. 111 contains Product Description and 111 A the Product Description Caption. 112
 25 contains Product Attribute and 112 A the Product Attribute Caption. 113 comprises of *iie*'s
 relevant textual response and 113 A contains the *iie* Script. 114 contains the Product value
 caption and 114 A the Value. 115 is the embodiment of the Product Specification database.

FIG 13 depicts the *ieInventory* screen, which allows the backend system to find out the exact
 30 stock in the virtual mall and links the stock status with the *iecatalog*. The selected product's
 description and the attributes along with the product's picture is also displayed. 116 is the

Database on individual product, while 117 is the Qualifier .
Pictorial display of individual product (Tables 3 to 6).

FIG 14 depicts the *ieTrainer*, which enables the human customer service support and the
5 system administrator to build the script for *ieBOSS*. Building the script is made very easy by
resorting to the drag and drop technology. The *ieTrainer* improvises and improves the *ieScript*
based on experience and information gathered with each customer encounter. 119 A is the link
to Script id (calls corresponding *ieBO*) and 128 is where the ID's of the script are available in
the database. 129 comprises the Customer Script ie., Script relevant to the script id in the
10 database and 130 is the *ie Script* ie., script retrieved from the database based on the response
from the function which is called by *ieBO*

FIG 15 is an overview to the initial transaction. In the sequence 1 and 2 the customer chooses a
link or gives an URL with the URL box to which the browser (XX) responds by requesting the
15 page from the web server (YY) and the server passes the request to the servlet (ZZ).
In sequence 3 and 4 the servlet (ZZ) responds with the HTML containing an applet tag that
references the required jar file.
In sequence 5 and 6 the browser (XX) find the applet tag and downloads the jar file from the
web server (YY), following which the applet initializes and gets started with an initial drawing
20 on the screen.
All this is standard protocol for Java applet and there is no variations.

FIG 15A is an overview to the subsequent transaction. In the sequence, 1 and 3 the applet
(WW) communicates with the web server directly and since the browser (XX) is not involved it
25 will not redraw.
In the sequence 3 and 4 the web server (YY) communicates with the servlet instead of setting
up a separate set of sockets. This avoids problems with firewalls.
All communications from the applet is embedded in HTML tags to fool proxies that check
content. This is not necessary for chat application. Servlet sessions eliminate the need for any
30 kind of threading.

FIG 15B is an overview to the chat transaction. In sequence buffers messages from both the applet (WW) and the chat application (CA). Both the applet (WW) and the chat application (CA) communicate with the servlet periodically to read from and add to these buffers.

- 5 In sequence 3 and 4 communication with the chat, application is through the local area network.

All communications from the applet (WW) are embedded in HTML tags to fool proxies that check content. This is not however necessary for the chat application. Servlet (ZZ) sessions eliminate the need for any kind of threading. The applet (WW) can keep a separate panel for chat. The applet (WW) can keep a separate panel for chat and this eliminates the need for a reload and redraw.

10

CLAIMS

1. A novel customer service software system to facilitate Intelligent Interactive E-commerce (iie) in a graphically simulated virtual Mall comprises of a plurality of software modules and tools which facilitates
5 online sales between a virtual customer and a graphically simulated virtual mall and a virtual iie catalogue providing information on stock in store and displaying products to virtual customer, the said modules and tools being installed in a individual computer/local network or applied on internet; the said software modules and tools has appropriate means to
10 navigate the virtual customer through the simulated aisle of the virtual Mall and to the product display area by means of text based scripts where the text based conversation switches from general conversation to specific intelligent interaction on requirements, choices, options and availability and stored data based on previous visits;

15 The said software modules and tools provide access to a full complement of backend support personnel to intercede in situations where the virtual customer so desires;

The said software modules and tools being integrated and maintained to provide vital link between electronic medium and real time customer
20 interacting and communicating in a virtual environment;

The said software modules and tools consist of an integrated trainer which imparts training to meet standards of behavior that would match any human customer service personnel.

5 2.A novel customer service software system to facilitate lie in a graphically simulated virtual Mall as claimed in claim 1 wherein the said software module and tools initiate a scripted dialogue based on databank of encrypted information and engages a customer to effect a sale.

10 3.A novel customer service software system to facilitate lie in a graphically simulated virtual mall as claimed in Claim 1 wherein said virtual mall graphically exhibits every single item put for sale and those available in the inventory of stock with the aide of a navigable aisle map which depicts the digital topography imagery of the real time store to
15 facilitate the customer to browse through the area of topical interest.

4. A novel customer service software system to facilitate lie in a graphically simulated virtual Mall as claimed in Claim 1 said virtual *ieCatalog* displays the entire range of products along with an history of
20 relevant specifications that would educate a customer in the course of decision making, the said *ieCatalog's* business logic comprises of barcode

connectivity and the feasibility to integrate with the world's leading inventory systems.

5 5. A novel customer service software system to facilitate iie in a graphically simulated virtual Mall as claimed in Claim 1 wherein the said iie is an application software technology - integrated, installed and maintained in the computer network of a brick and mortar store to facilitate online transactions at anytime from any customer location.

10 6. A novel customer service software system to facilitate iie in a graphically simulated virtual mall as claimed in Claim 1 wherein the said step of navigation, when a virtual customer Clicks and enters a mall either with specific intention to effect a specific purchase or simply window browse, comprises of the following steps and sequences:

15 (a) Welcoming the virtual customer with appropriate greeting and interacting to understand the requirement.

(b) Embarking on an exercise of virtual ushering to the relevant product zone of the mall.

(c) Show-casing and visual display of consumables

20 (d) Starting a highly subjective debate and analysis of the product in consideration

(e) Initiating the process of bargain on choice purchases, general bargain offers and introduction to discount and clearance sale etc., to widen customer purchase option in the graphically simulated virtual mall.

5 (f) Exercising of counter offers ensues in the event of a deadlock on account of unavailability, cost coefficient or any other extraneous reasons on the part of the customer.

(g) Providing a virtual trial room to try out body-wares, through the process of photo scanning and digital imaging

10 (h) Facilitating rain-checks to assist and facilitate future procurement of unavailable items

(i) Finalising a transaction once the primary objective of a virtual visit has been met

15 (j) Confirming and placing of order, billing process, scope of payment modes and formalities

(k) Providing options and details regarding delivery of orders

7. A novel customer service software system to facilitate *ii*e in a graphically simulated virtual Mall as claimed in Claim 1 wherein the said
20 steps to access backend support comprises of:

(a) Connecting on request with human customer service personnel either through text based interaction or

multimedia audio visual communication, the access being provided via media, the said *iie*

(b) The access to backend support includes advanced intra business interaction between multiple *iies*

5

8. A novel customer service software system to facilitate *iie* in a graphically simulated virtual Mall as claimed in Claim 1 wherein the process of the *iie* application includes:

10

(a) Providing a customer with the online access to a product homepage and said product homepage linking to a searchable product database of products available for purchase

15

(b) Providing speech synthesis and voice recognition devices to communicate and interact with the virtual customer

(c) Providing electronic access to credit account information of customer by networking with online banking.

(d) Providing for money transaction done through cyber cash

20

(e) Providing communication security for the cyber cash through Secured Socket Layer where encrypted data is sent to receiver and said data is decrypted either through

cryptography algorithms or private key and public key exchange mechanism

(f) Providing training to understand and learn new skills and respond to diverse customer cultural and behavioral patterns and carry out instructions

(g) Displaying versatile textual information and multi dimensional, directional and angular images based on customer requirement and the attributes of product in consideration

(h) Providing for continuous improvisation and upgradation of technology to develop multi-lingual scripts for the benefit of global multi-ethnic access

(i) Providing for maintenance of a dossier of customer feed-back and suggestions

(j) Providing for maintaining a archive of customer history ranging from personal data like birthdays, anniversaries etc., to hobbies and choice preferences thereby sustain communicable rapport at all times

(k) Providing capability to invite customer feedback and suggestions and initiate remedial responses based on said feedback

(l) Providing for simultaneous access to a 'rendezvous window' from multiple locations to conduct 'chat shopping' by friends and relatives

(m) Providing customer access by using any computer system or any PDA system or any mobile palm top device with a wireless application protocol, from anywhere on the globe

9. A novel customer service software system to facilitate *iie* in a graphically simulated virtual Mall as claimed in Claim 1 wherein the said scope of training the said *iie* comprises of:

(a) An *ieTrainer* programmed to inculcate in the said *iie*, the behavioral patterns akin to that of a human being and as may be warranted by the demands of an encounter with a customer

(b) Providing a knowledge database (*ieKBase*), which is an accumulation of latent experiences and encounters with customers, based on which the *ieTrainer*, effectively manipulates and improvises responses to suit various situations.

10. A novel customer service software system to facilitate *iie* in a graphically simulated virtual Mall as claimed in Claim 1 wherein the *iie* includes a database of member information, which is a collection of personal and business related data accumulated through previous
5 encounters and utilised to enhance the content and quality of a conversation and the ability to communicate to the client's backend system/operational system through the use of "command language"

11. A novel customer service software system to facilitate *iie* in a
10 graphically simulated virtual Mall as claimed in Claim 1 wherein within *ieKBASE* the scripts are documented and stored.

12. A novel customer service software system to facilitate *iie* in a graphically simulated virtual Mall as claimed in Claim 1 wherein the
15 *ieConverse* facilitates interaction between the virtual customer and back end support.

13. A novel customer service software system to facilitate *iie* in a graphically simulated virtual Mall as claimed in Claim 1 wherein *ieBO* is a
20 maintenance support module

14. A novel customer service software system to facilitate *iie* in a graphically simulated virtual Mall as claimed in Claim 1 wherein the architecture of the system depicts the customer accessing the system server through a secure network and connects with the *ieBus* onto which
5 the entire functional modules are networked for coordinated implementation of tasks.

15. A novel customer service software system to facilitate *iie* in a graphically simulated virtual Mall as claimed in Claim 1 wherein the
10 *ieBOSS* is backend business logic which controls the other sub-modules and is responsible for maintaining the dialogue between the customer and the system.

16. A novel customer service software system to facilitate *iie* in a
15 graphically simulated virtual Mall as claimed in Claim 1 wherein the backend business logic system *ieBO* relates to the maintenance of the object-oriented system.

17. A novel customer service software system to facilitate *iie* in a
20 graphically simulated virtual Mall as claimed in Claim 1 wherein *ieSCRIPT* Manager Comprises backend business logic related to the creation of generic variables which are required during script generation process

using predetermined textual parameter that initiate an interactive conversation.

18. A novel customer service software system to facilitate *ie* in a
5 graphically simulated virtual Mall as claimed in Claim 1 wherein *ie*
backend support system extends process logic and decision support logic
at the time of script generation.

19. A novel customer service software system to facilitate *ie* in a
10 graphically simulated virtual Mall as claimed in Claim 1 product
specification screen consists of business logic related to attributes
qualifier, and script pertaining to product specifications.

20. A novel customer service software system to facilitate *ie* in a
15 graphically simulated virtual Mall as claimed in Claim 1 wherein
ieInventory consists of backend business logic related to the creation of
drag & drop scripts essential for backend process that culminate in
intelligent interaction with customers.

20 21. A novel customer service software system to facilitate *ie* in a
graphically simulated virtual Mall as claimed in Claim 1 wherein the
ieTrainer is a subsystem, which imbibes artificial intelligence into the

entire system to dynamically generate scripts based on the options extended in text by the customer.

22. The system as described in the entire specification and as s illustrated by way of drawings.

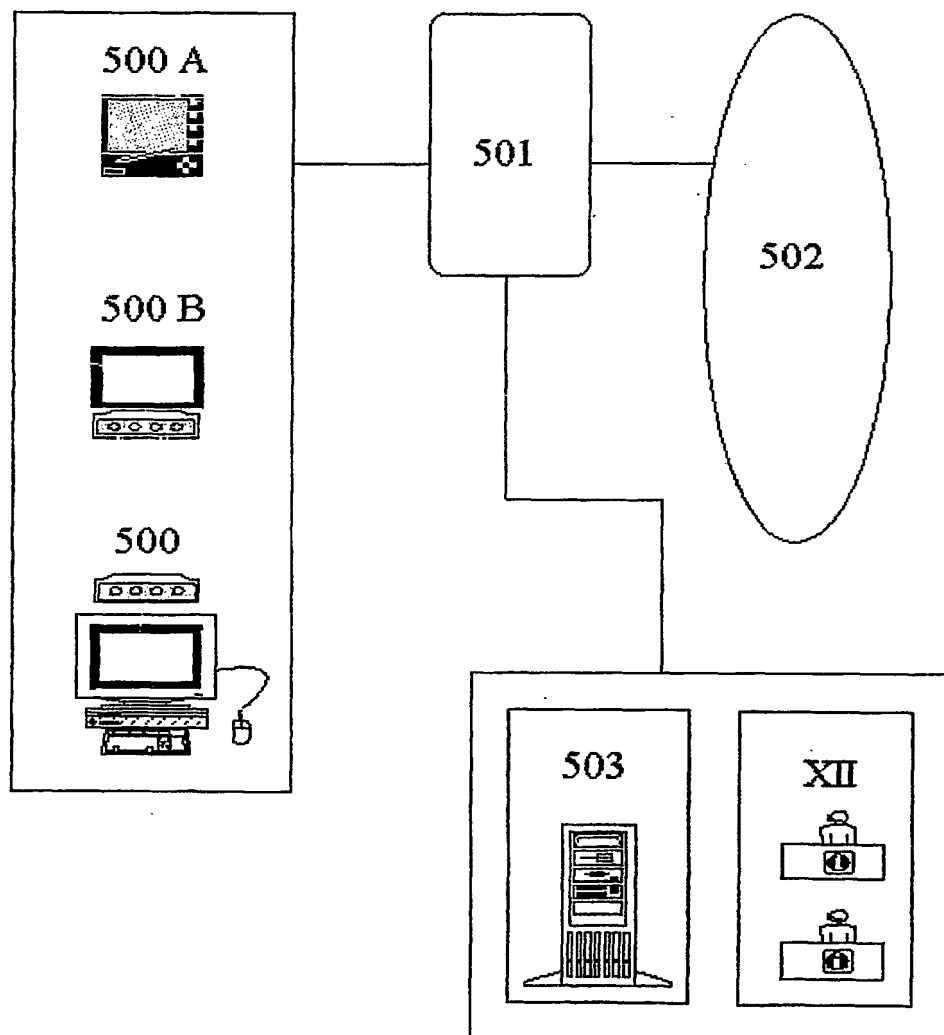
Fig 1*ii* Access Process Sequence

Fig 2

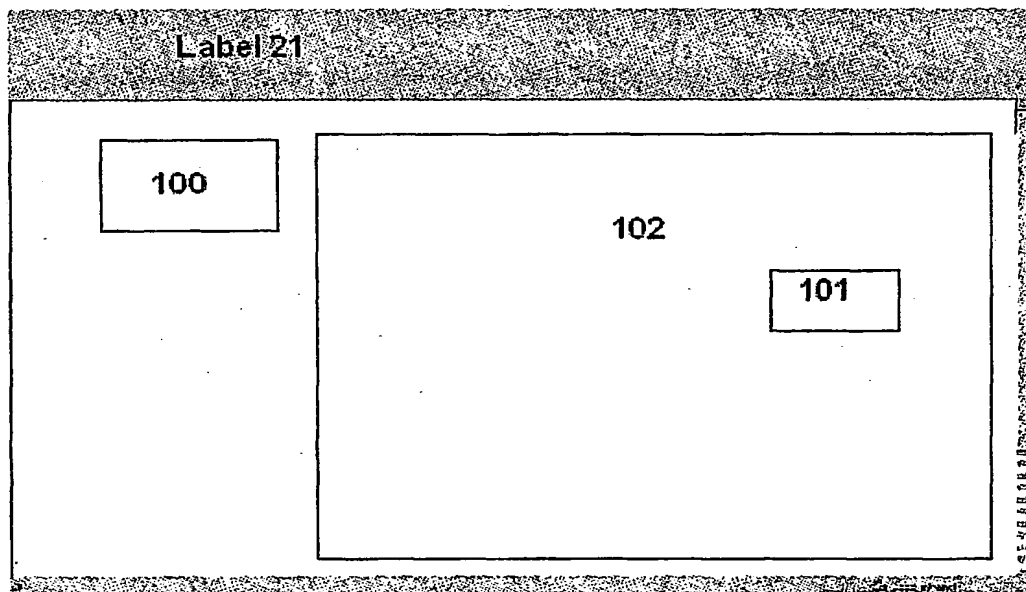
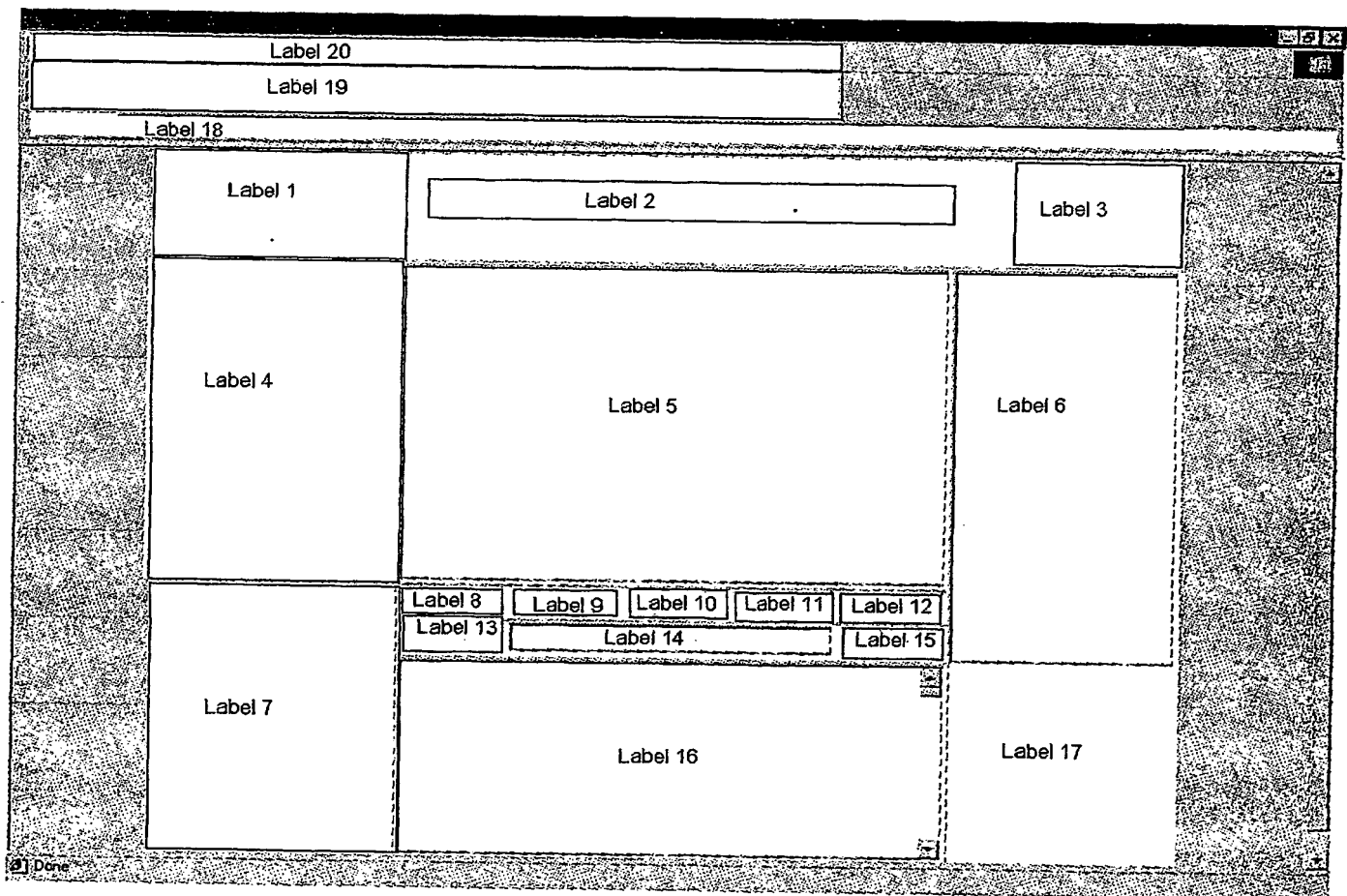


Fig 3

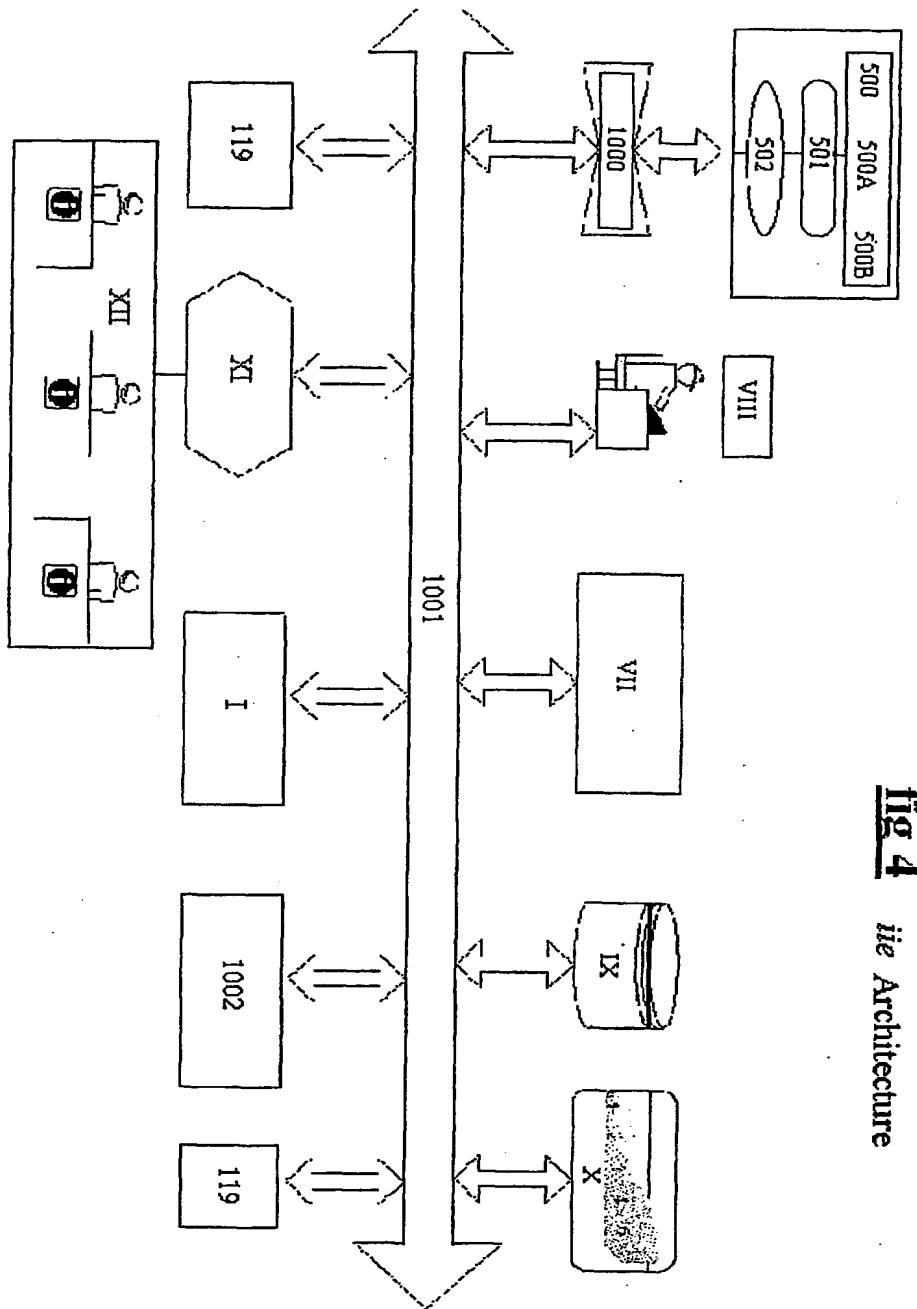


fig 4 *iie Architecture*

Fig 5

Mall isle Map

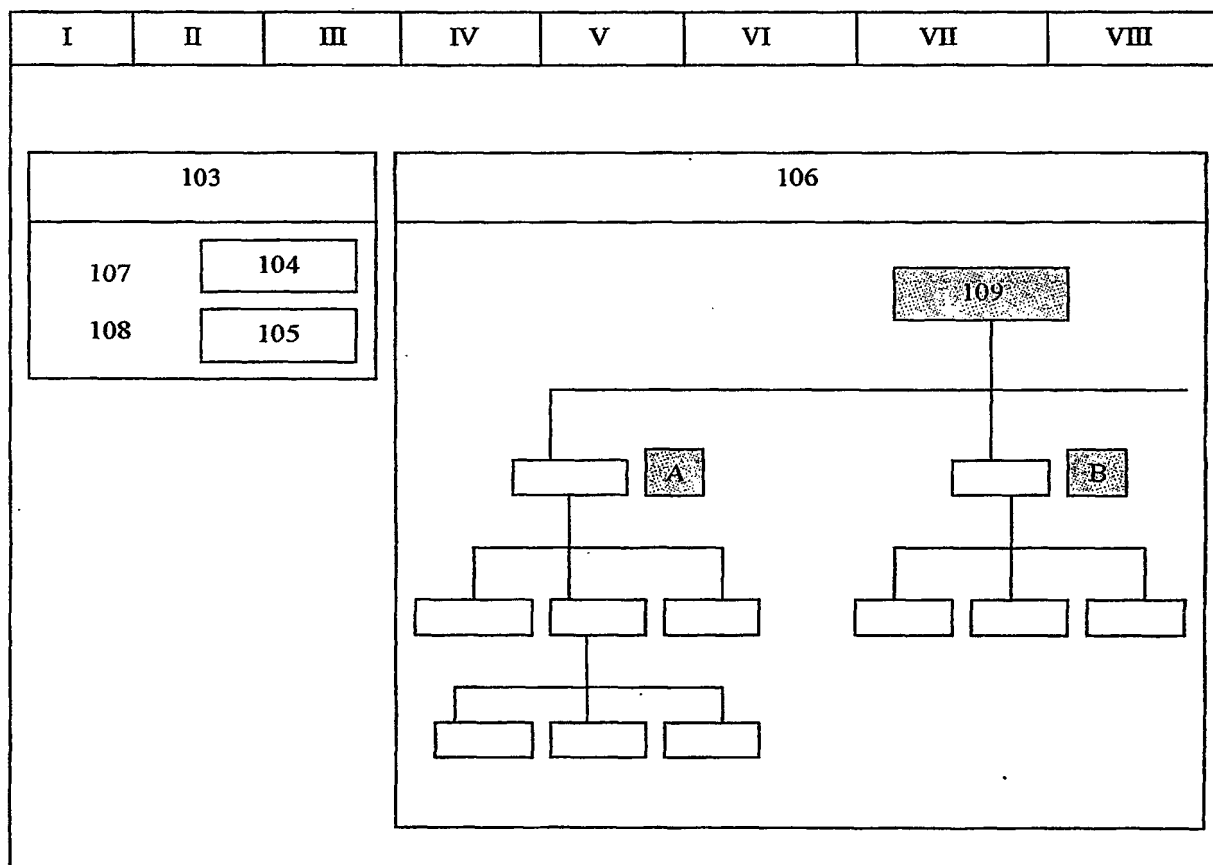


Fig 6*ieBOSS*

VII					
A	B	C	D	E	F

Fig 7*ieBO* Maintenance system

IV	
119	
119	
120	121
122	
120	121
123	
120	124

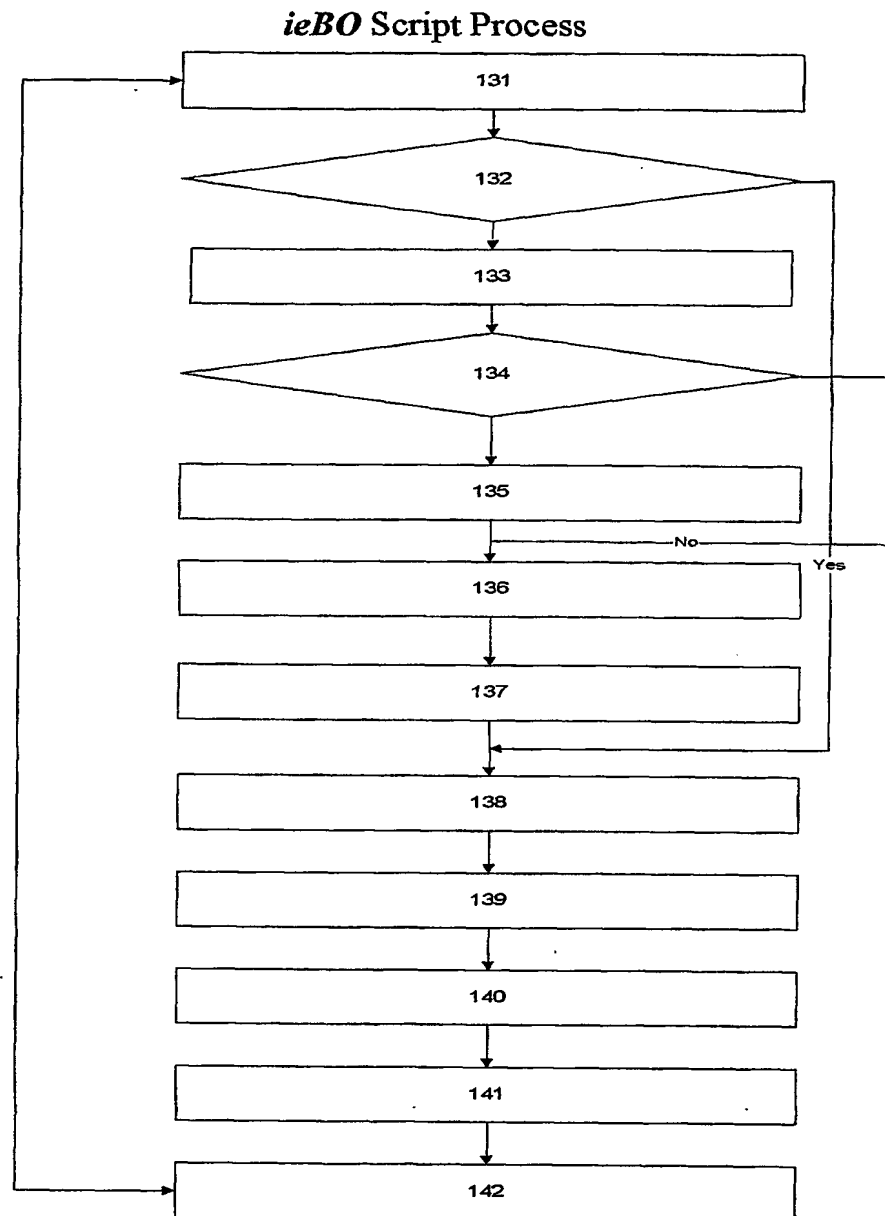
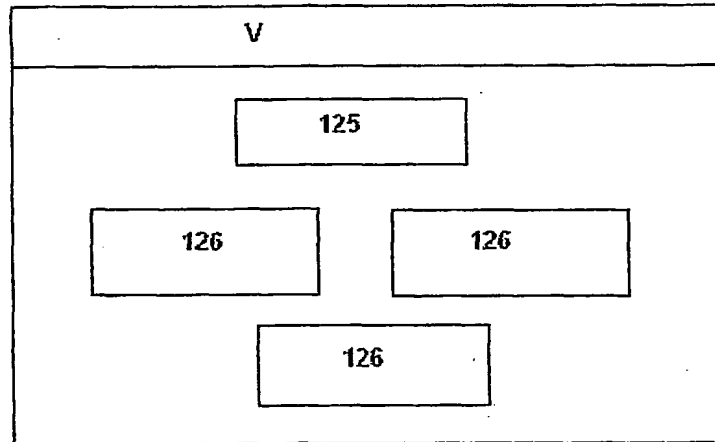
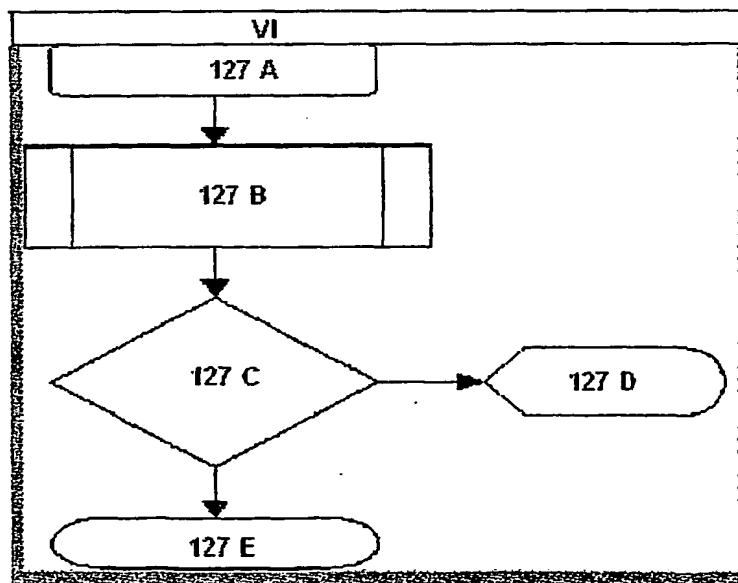
Fig 8

Fig 9

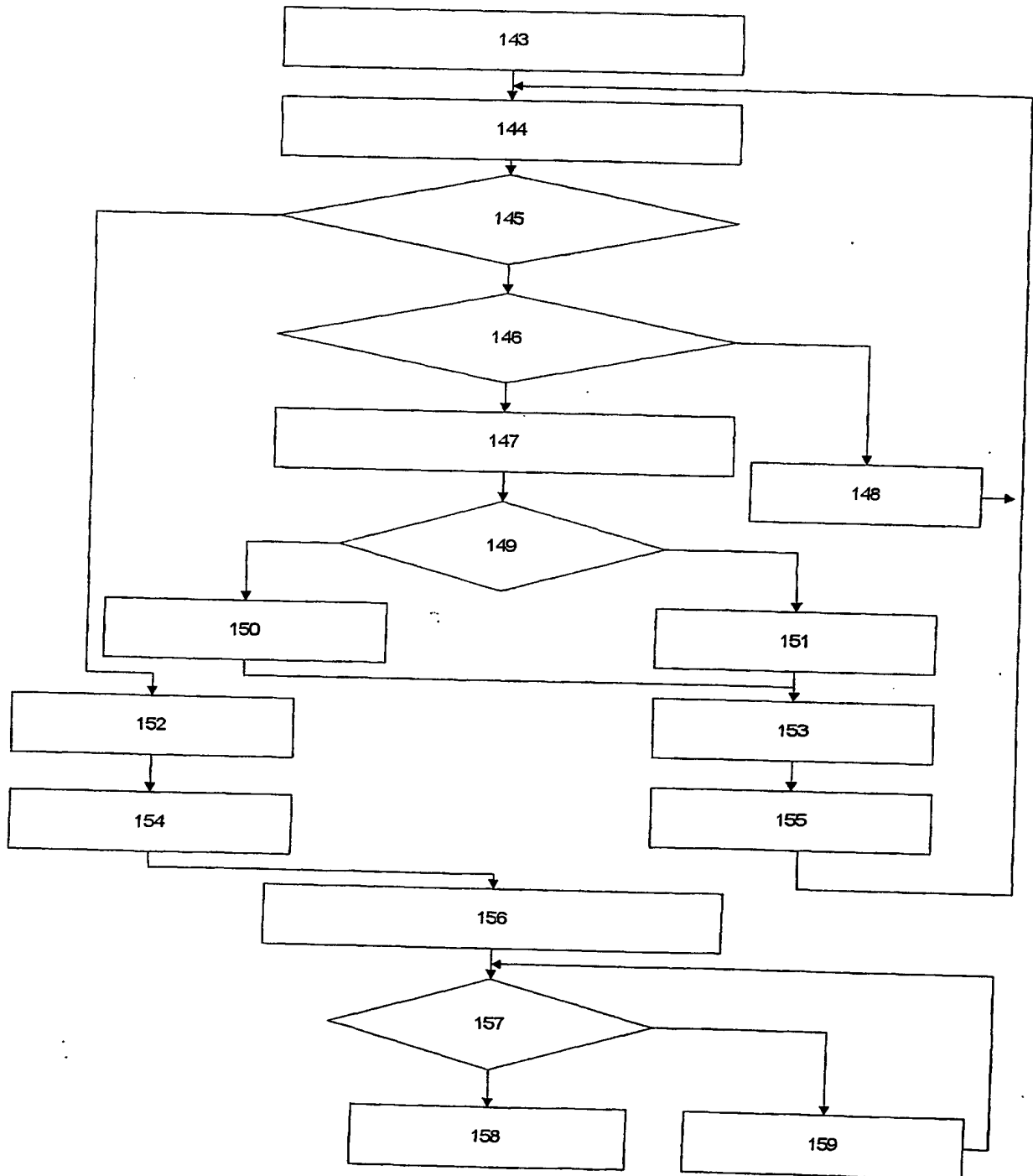
Script Manager

**Fig 10**

Decision support system



9/13

Fig 11**Product Process**

10/13

Fig12

Product Specification screen

The figure shows a graphical user interface for a 'Product Specification screen'. It features a dark background with a list of five items on the left, each followed by a corresponding input field on the right. The items are labeled 110 A through 114 A. Below this list is a section labeled 115, which contains two input fields labeled 110 and 111. The entire interface is enclosed in a rectangular frame with a title bar at the top.

II	
110 A	110
111 A	111
112 A	112
113 A	113
114 A	114
115	
110	111

Fig 13*ieInventory*

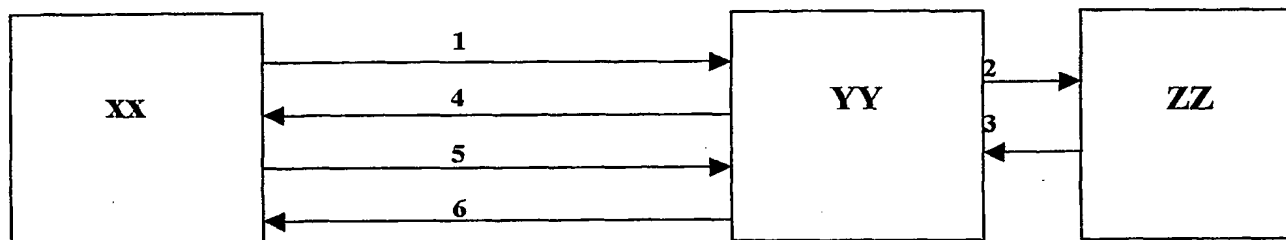
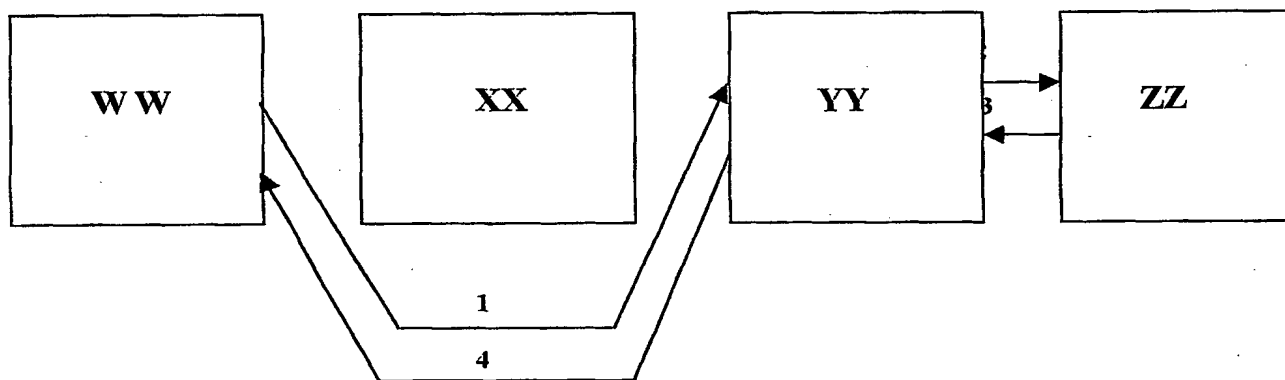
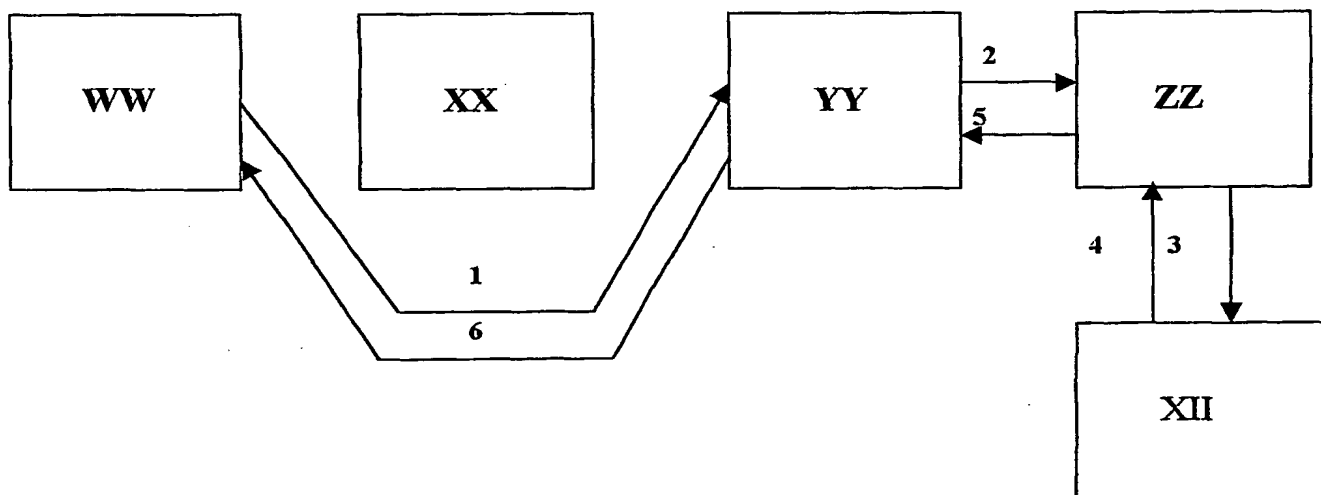
The figure shows a graphical user interface for an 'ieInventory' screen. It features a light background with a hierarchical layout of rectangular boxes. The top section is labeled 115 and contains two large boxes labeled 110 and 111. Below this is a section labeled 116, which contains three boxes labeled 117, 114, and 118. The entire interface is enclosed in a rectangular frame with a title bar at the top.

III		
115		
110	111	
116		
117	114	118

11/13

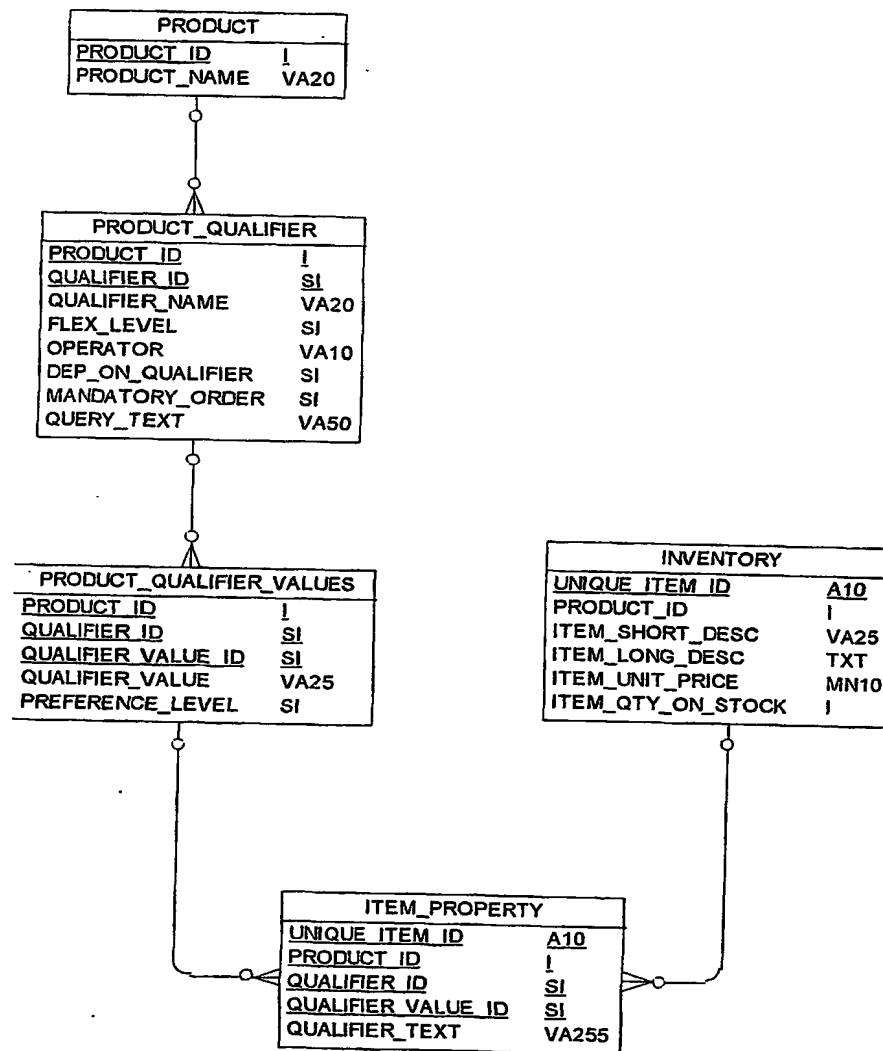
Fig 14*ieTrainer*

VIII							
119	128	129	120	121	130	128 A	119 A

Fig: 15**Interactive ecommerce: Initial transaction review****Fig: 15 A****Interactive ecommerce: Subsequent transaction review****Fig: 15 B****Interactive ecommerce: Chat transaction review**

Tables Design

ii Database Design



INTERNATIONAL SEARCH REPORT

Internat Application No
PCT/IN 00/00135

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 G06F17/60

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 G06F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, PAJ, IBM-TDB, INSPEC

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 00 33226 A (NIX KEVIN R ;COKER JOHN L (US); MALDEN MATTHEW (US); SIEBEL SYSTEM) 8 June 2000 (2000-06-08) abstract page 1, line 13 - line 26 page 3, line 14 - line 24 page 6, line 1 - line 25 page 9, line 14 - line 19	1-22
X	US 6 125 356 A (JONES DONALD D ET AL) 26 September 2000 (2000-09-26) abstract; figure 1 column 4, line 24 -column 5, line 49	1-22
A	US 5 309 355 A (LOCKWOOD LAWRENCE B) 3 May 1994 (1994-05-03) abstract column 3, line 21 -column 4, line 27	1-22

☐ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

* Special categories of cited documents:

A document defining the general state of the art which is not considered to be of particular relevance

E earlier document but published on or after the international filing date

L document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

O document referring to an oral disclosure, use, exhibition or other means

P document published prior to the international filing date but later than the priority date claimed

T later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

X document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

Y document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

* & * document member of the same patent family

Date of the actual completion of the international search

27 September 2001

Date of mailing of the international search report

08/10/2001

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel (+31-70) 340-2040, Tx. 31 651 epo nl,
Fax (+31-70) 340-3016

Authorized officer

Pinheiro, T

INTERNATIONAL SEARCH REPORT

Information on patent family members

Internat Application No
PCT/IN 00/00135

Patent document cited in search report		Publication date		Patent family member(s)		Publication date
WO 0033226	A	08-06-2000	AU	1838300 A		19-06-2000
			WO	0033226 A1		08-06-2000
US 6125356	A	26-09-2000	US	5826240 A		20-10-1998
			AU	9483598 A		05-04-1999
			WO	9914688 A2		25-03-1999
			AU	2303797 A		11-08-1997
			EP	0875036 A2		04-11-1998
			WO	9726610 A2		24-07-1997
US 5309355	A	03-05-1994	US	4567359 A		28-01-1986
			US	5576951 A		19-11-1996
			CA	1236216 A1		03-05-1988
			US	6289319 B1		11-09-2001